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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,895	12/14/2001	Jie Sun	12583.21US01	1959

23552 7590 02/15/2005

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EXAMINER	
TSAI, CAROL S W	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,895	SUN ET AL.	
	Examiner	Art Unit	
	Carol S. Tsai	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-129* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-129* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 8, 9, 32-35, 39, 40, 63-66, 70, 71, 94, 98, 101, 106, 110, 113, 118, 122, and 125 are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Publication 2004/00001194 to Wilstrup et al.

The applied reference has a common assignee/common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1, 9, 32, 40, 63, 71, 94, 98, 101, 106, 110, and 113, Wilstrup et al. disclose a method of analyzing a measurable distribution having random components and

deterministic components, comprising the steps of: (a) collecting data from a data signal (see paragraph 0031); (b) constructing a probability density function based on the data such that tile probability density function defines a distribution, wherein the probability density function is a convolution of deterministic functions and random functions (see paragraphs 0008, 0032, and 0034-0037); (c) construct a probability density function based on a convolution model having three or more parameters wherein at least one of the parameters are unknown, the convolution model having a deterministic model and a random model (see paragraphs 0034, 0037, 0038, and 0047); (d) determining unknown parameters by using a deconvolution process employed upon the probability density functions constructed in steps (b) and (c) (see paragraphs 0034-0037 and 0044).

As to claims 118, 122, and 125, Wilstrup et al. also disclose a method of analyzing a variation distribution having random components and deterministic components, comprising the steps of: (a) receiving reference data and a data record that is descriptive of a signal (see paragraph 0013); (b) constructing a probability density function based on the variation between the data record and the reference data such that the probability density function defines a distribution, wherein the probability density function is a convolution of deterministic functions and random functions (see paragraphs 0013-0015, 0028, 0032, 0034-0037, and 0042-0044); (c) constructing a probability density function based on a convolution model having three or more parameters wherein at least one of the parameters are unknown, the convolution model having a deterministic model and a random model (see paragraphs 0037, 0038, and 0047); (d) determining unknown parameters by using a deconvolution process employed upon the probability density functions constructed in steps (b) and (c) (see paragraphs 0034-0036 and 0044).

As to claims 2-4, 33-35, and 64-66, Wilstrup et al. also disclose the deterministic model having a deterministic parameter and the random model having two or more random parameters (see paragraphs 0030 and 0049).

As to claims 8, 39, and 70, Wilstrup et al. also disclose the distribution being a signal distribution (see paragraph 0037).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5, 6, 36, 37, 67, 68, 87, 88, 95, 99, 102, 107, 111, 114, 119, 123, and 126 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al. in view of U. S. Patent No. 5,057,992 to Traiger.

As noted above, with respect to claims 5, 6, 36, 37, 67, 68, 87, 88, 95, 99, 102, 107, 111, 114, 119, 123, and 126, Wilstrup et al. disclose the claimed invention, except for formulating an inverse problem; and solving the inverse problem to extract the parameters.

Traiger teaches formulating an inverse problem; and solving the inverse problem to extract the parameters (see col. 3, line 43 to col. 4, line 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wilstrup et al.'s method to include formulating an inverse problem; and solving the inverse problem to extract the parameters, as taught by Traiger, in order

to that ill-posed problem because neither the upper limit of the convolution integral, nor the order of the transmission "channel" is known a-priori, in general can be overcome (see col. 3, lines 45-48).

6. Claims 7, 38, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al. in view of Traiger as applied to claims 1, 5, 32, 36, 63, and 67 above, and further in view of U. S. Publication 2001/0036228 to Skafidas et al.

As noted above, with respect to claims 7, 38, and 69, Wilstrup et al. in combination with Traiger teach all the features of the claimed invention, but do not disclose the inverse problem being solved via an optimizer based solution.

Skafidas et al. teach the inverse problem being solved via an optimizer based solution (see paragraphs 0056-0063).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wilstrup et al. in view of Traiger's method to include the inverse problem being solved via an optimizer based solution, as taught by Skafidas et al., in order that data received from a communications channel can be equalized and distortion and noise from the data can be removed (see Skafidas et al., paragraph 0002, lines 3-5).

7. Claims 10-13, 17, 18, 21-24, 28, 29, 41-44, 48, 49, 52-55, 59, 60, 72-75, 79, 80, 83-86, 90, 91, 96, 97, 100, 103, 105, 108, 109, 112, 115, 117, 120, 121, 124, 127, and 129, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al. in view of U. S. 2002/0003843 to Martone.

As noted above, with respect to claims 10, 18, 21, 29, 41, 49, 52, 60, 72, 80, 83, 96, 100, 103, 108, 112, 115, 120, 124, and 127, Wilstrup et al. disclose the claimed invention, except for at least one random model parameter is known, wherein the determining step further comprises the step of: determining a deterministic model parameter based on the known random model parameter by using a deconvolution process.

Martone teaches at least one random model parameter is known, wherein the determining step further comprises the step of: determining a deterministic model parameter based on the known random model parameter by using a deconvolution process (see paragraph 0070).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ward et al.'s method to include at least one random model parameter is known, wherein the determining step further comprises the step of: determining a deterministic model parameter based on the known random model parameter by using a deconvolution process, as taught by Martone, in order that a jitter correction can be provided to minimize signal measuring inaccuracy effects in a signal processing system.

As to claims 11-13, 22-24, 42-44, 53-55, 73-75, 84-86, 97, 105, 109, 117, 121, and 129, Wilstrup et al. also disclose the deterministic model having a deterministic parameter and the random model having two or more random parameters (see paragraphs 0030 and 0049).

As to claims 17, 28, 48, 59, 79, 90, and 91, Wilstrup et al. also disclose the distribution being a signal distribution (see paragraph 0037).

8. Claims 14, 15, 19, 20, 25, 26, 30, 31, 45, 46, 50, 51, 56, 57, 61, 62, 76, 77, 81, 82, 92, 93, 104, 116, and 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al.

in view of Martone as applied to claims 10, 18, 21, 29, 32, 41, 49, 52, 53, 60, 63, 72, 80, 83, 91, 101, 103, 113, 115, 125, and 127, above, and further in view of U. S. Patent No. 5,057,992 to Traiger.

As noted above, with respect to claims 14, 15, 19, 20, 25, 26, 30, 31, 45, 46, 50, 51, 56, 57, 61, 62, 76, 77, 81, 82, 92, 93, 104, 116, and 128, Wilstrup et al. in combination with teach all the features of the claimed invention, but do not disclose formulating an inverse problem; and solving the inverse problem to extract the parameters.

Traiger teaches formulating an inverse problem; and solving the inverse problem to extract the parameters (see col. 3, line 43 to col. 4, line 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wilstrup et al.'s method to include formulating an inverse problem; and solving the inverse problem to extract the parameters, as taught by Traiger, in order to that ill-posed problem because neither the upper limit of the convolution integral, nor the order of the transmission "channel" is known a-priori, in general can be overcome (see col. 3, lines 45-48).

9. Claims 16, 27, 47, 58, 78, and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al. in view of Martone and Traiger as applied to claims 1, 10, 14, 21, 25, 32, 41, 45, 52, 56, 63, 72, 76, 83, and 87, above, and further in view of U. S. Publication 2001/0036228 to Skafidas et al.

As noted above, with respect to claims 16, 27, 47, 58, 78, and 89, Wilstrup et al. in combination with Traiger and Martone teach all the features of the claimed invention, but do not disclose the inverse problem being solved via an optimizer based solution.

Skafidas et al. teach the inverse problem being solved via an optimizer based solution (see paragraphs 0056-0063).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wilstrup et al. in view of Traiger and Martone's method to include the inverse problem being solved via an optimizer based solution, as taught by Skafidas et al., in order that data received from a communications channel can be equalized and distortion and noise from the data can be removed (see Skafidas et al., paragraph 0002, lines 3-5).

10. Claims 116 and 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilstrup et al. in view of Martone as applied to claims 113 and 115 above, and further in view of U. S. Patent No. U. S. Patent No. 5,057,992 to Traiger.

As noted above, with respect to claims 116 and 128, Wilstrup et al. in combination with Martone teach all the features of the claimed invention, but do not disclose formulating an inverse problem; and solving the inverse problem to extract the parameters.

Traiger teaches formulating an inverse problem; and solving the inverse problem to extract the parameters (see col. 3, line 43 to col. 4, line 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wilstrup et al. in combination with Martone's method to include formulating an inverse problem; and solving the inverse problem to extract the parameters, as

taught by Traiger, in order to that ill-posed problem because neither the upper limit of the convolution integral, nor the order of the transmission "channel" is known a-priori, in general can be overcome (see col. 3, lines 45-48).

Response to Arguments

11. Applicant's arguments with respect to claims 1-129 have been considered but are moot in view of the new ground(s) of rejection.

Response to Arguments

12. Applicant's arguments filed January 3, 2005 have been fully considered but they are not persuasive.

Applicants argue that the Examiner has taken a comment from the Background section of Wilstrup et al., namely that, "Jitter is a statistical process and has a probability density function (PDF) associated with it", and applied this comment to the Wilstrup et al. detailed description; however, Wilstrup et al. does not disclose constructing two probability density functions and then performing deconvolution on them as recited in Applicants' invention. The Examiner disagrees with Applicants. As set forth above in the art rejection, Wilstrup et al. do disclose (b) constructing a probability density function based on the variation between the data record and the reference data such that the probability density function defines a distribution, wherein the probability density function is a convolution of deterministic functions and random functions (see paragraphs 0013-0015, 0028, 0032, 0034-0037, and 0042-0044; The optical analyzer 210 analyzes the deterministic and random components of a distribution. Jitter in serial data

communication is a difference of data transition times relative to ideal bit clock active transition times. As in all signals, jitter has deterministic and random components. Deterministic jitter is bounded in its amplitude and can be measured as a peak to peak value. Random jitter is unbounded in its amplitude and Gaussian in nature. Since random jitter is probabalistic, it may be quantified by one sigma of standard deviation estimate. Random jitter is modeled by a Gaussian distribution. The total jitter distribution may be modeled by the superposition of multiple Gaussian functions); (c) constructing a probability density function based on a convolution model having three or more parameters wherein at least one of the parameters are unknown, the convolution model having a deterministic model and a random model (see paragraphs 0034, 0037, 0038, and 0047; Wavelength characteristics of the unknown device may include spectrum, jitter, drift, unit to unit variations, power supply variations, temperature, time, and chirp. The optical analyzer 210 takes a statistical sample of the spectrum through the range of wavelengths. If the dispersion characteristic of reference device 108 is a one to one function, a spurious free spectrum is measured); (d) determining unknown parameters by using a deconvolution process employed upon the probability density functions constructed in steps (b) and (c) (see paragraphs 0034-0037 and 0044; Random jitter is unbounded in its amplitude and Gaussian in nature. Since random jitter is probabalistic, it may be quantified by one sigma of standard deviation estimate. Random jitter is modeled by a Gaussian distribution. The total jitter distribution may be modeled by the superposition of multiple Gaussian functions. The optical analyzer 210 may separate the deterministic and random components of the jitter. A PDF for the deterministic component and rms value for the random component can be obtained).

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. W. Tsai whose telephone number is (571) 272-2224. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571) 272-2216. The fax number for TC 2800 is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (571) 272-1585 or (571) 272-2800.

In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. W. Tsai
Patent Examiner
Art Unit 2857

02/12/05